

SEQUENCE LISTING

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<110> Kumamoto Technology & Industry Foundation

<120> anti-HIV antibody

<130> G06-0029US

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<141> 2004-03-09

<150> JP 2003-418655

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<160> 9

<170> PatentIn version 3.2

<210> 1

<211> 6429

<212> DNA

<213> Mus musculus

<220>

<221> CDS

<222> (384).. (6299)

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ccc	ttc	cag	cct	gcc	ctg	ccg	ctg	gtg	gtc	ctc	gtg	ccc	agc	tcc	4874
Pro	Phe	Gln	Pro	Ala	Leu	Pro	Leu	Val	Val	Leu	Val	Pro	Ser	Ser	
		1485					1490					1495			
aga	ggg	gac	tcc	gcg	ggg	agg	gca	gta	gag	gac	ggt	ctg	atg	tta	4919
Arg	Gly	Asp	Ser	Ala	Gly	Arg	Ala	Val	Glu	Asp	Gly	Leu	Met	Leu	
		1500					1505					1510			
cag	gat	ttg	gtt	tca	gcc	aag	ctg	att	tcc	gat	tac	att	gtt	gtt	4964
Gln	Asp	Leu	Val	Ser	Ala	Lys	Leu	Ile	Ser	Asp	Tyr	Ile	Val	Val	
		1515					1520					1525			
gag	att	cct	gac	tct	gtt	aat	gat	tta	caa	ggc	aca	gtg	aag	gtt	5009
Glu	Ile	Pro	Asp	Ser	Val	Asn	Asp	Leu	Gln	Gly	Thr	Val	Lys	Val	
		1530					1535					1540			
tct	gga	gca	gtc	cag	tgg	ctg	atc	tcc	gga	tgt	cct	caa	gcc	cta	5054
Ser	Gly	Ala	Val	Gln	Trp	Leu	Ile	Ser	Gly	Cys	Pro	Gln	Ala	Leu	
		1545					1550					1555			
gac	ctt	tgc	tgc	cag	acc	ctt	gtt	cag	tat	gtt	gag	gat	ggg	atc	5099
Asp	Leu	Cys	Cys	Gln	Thr	Leu	Val	Gln	Tyr	Val	Glu	Asp	Gly	Ile	
		1560					1565					1570			
agc	cgc	gag	ttc	agc	cgt	cgg	ttt	ttc	cac	gac	agg	aga	gag	agg	5144
Ser	Arg	Glu	Phe	Ser	Arg	Arg	Phe	Phe	His	Asp	Arg	Arg	Glu	Arg	
		1575					1580					1585			
cgc	ctg	gct	agc	ctg	ccc	tcc	cag	gag	cct	agc	acc	att	att	gag	5189
Arg	Leu	Ala	Ser	Leu	Pro	Ser	Gln	Glu	Pro	Ser	Thr	Ile	Ile	Glu	
		1590					1595					1600			
ttg	ttc	aac	agt	gtg	ctg	cag	ttc	ctg	gcc	tct	gtg	gta	tcc	tct	5234
Leu	Phe	Asn	Ser	Val	Leu	Gln	Phe	Leu	Ala	Ser	Val	Val	Ser	Ser	
		1605					1610					1615			
gag	cag	ctg	tgt	gac	atc	tcc	tgg	cct	gtc	atg	gaa	ttt	gcc	gaa	5279
Glu	Gln	Leu	Cys	Asp	Ile	Ser	Trp	Pro	Val	Met	Glu	Phe	Ala	Glu	
		1620					1625					1630			
gtg	gga	ggc	agc	cag	ctg	ctt	cct	cac	ctg	cac	tgg	aac	tca	cca	5324
Val	Gly	Gly	Ser	Gln	Leu	Leu	Pro	His	Leu	His	Trp	Asn	Ser	Pro	
		1635					1640					1645			

gag cat cta	gcg tgg ctg aaa	caa gct gtg ctt ggg	ttc cag ctt	5369
Glu His Leu	Ala Trp Leu Lys	Gln Ala Val Leu Gly	Phe Gln Leu	
1650	1655	1660		
cca cag atg	gac ctt cca ccc	cca ggg gcc ccc	tgg ctc cct gtg	5414
Pro Gln Met	Asp Leu Pro Pro	Pro Gly Ala Pro Trp	Leu Pro Val	
1665	1670	1675		
tgt tcc atg	gtc att cag tac	acc tcc cag att ccc	agc tca agc	5459
Cys Ser Met	Val Ile Gln Tyr	Thr Ser Gln Ile Pro	Ser Ser Ser	
1680	1685	1690		
cag aca cag	cct gtc ctc cag	tcc cag gcg gag aac	ctg ctg tgc	5504
Gln Thr Gln	Pro Val Leu Gln	Ser Gln Ala Glu Asn	Leu Leu Cys	
1695	1700	1705		
aga aca tac	cag aag tgg aag	aac aag agc ctc tct	cca ggc cag	5549
Arg Thr Tyr	Gln Lys Trp Lys	Asn Lys Ser Leu Ser	Pro Gly Gln	
1710	1715	1720		
gag ttg ggg	cct tct gtt gcc	gag atc ccg tgg gat	gac atc atc	5594
Glu Leu Gly	Pro Ser Val Ala	Glu Ile Pro Trp Asp	Asp Ile Ile	
1725	1730	1735		
acc tta tgc	atc aat cat aag	ctg agg gac tgg aca	ccc ccc agg	5639
Thr Leu Cys	Ile Asn His Lys	Leu Arg Asp Trp Thr	Pro Pro Arg	
1740	1745	1750		
ctc cct gtc	aca tta gag gcg	ctg agt gaa gat ggt	caa ata tgt	5684
Leu Pro Val	Thr Leu Glu Ala	Leu Ser Glu Asp Gly	Gln Ile Cys	
1755	1760	1765		
gtg tat ttt	ttc aaa aac ctt	tta aga aaa tac cac	gtt ccc tcg	5729
Val Tyr Phe	Phe Lys Asn Leu	Leu Arg Lys Tyr His	Val Pro Ser	
1770	1775	1780		
tca tgg gaa	cag gcc aga atg	cag acg cag cgg gaa	ctg cag ctg	5774
Ser Trp Glu	Gln Ala Arg Met	Gln Thr Gln Arg Glu	Leu Gln Leu	
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agt cat gga	cgt tcg ggg atg	agg tcc atc cat cct	cct aca agc	5819
Ser His Gly	Arg Ser Gly Met	Arg Ser Ile His Pro	Pro Thr Ser	
1800	1805	1810		
act ttt cct	act cca ttg ctt	cat gta cac cag aaa	ggg aag aaa	5864
Thr Phe Pro	Thr Pro Leu Leu	His Val His Gln Lys	Gly Lys Lys	
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aag gaa gag	agt ggc cga gag	ggg agc ctc agt aca	gag gac ctc	5909
Lys Glu Glu	Ser Gly Arg Glu	Gly Ser Leu Ser Thr	Glu Asp Leu	
1830	1835	1840		
ctg cgg ggg	gct tct gca gaa	gag ctc ctg gca cag	agt ctg tcc	5954
Leu Arg Gly	Ala Ser Ala Glu	Glu Leu Leu Ala Gln	Ser Leu Ser	
1845	1850	1855		
agc agt ctt	ctg gaa gag aag	gaa gag aac aag agg	ttt gaa gat	5999

His Ser Ser Ser Leu Pro Ala Phe Gly Leu Thr Gln Thr Ser Ser Val
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Gly Leu Phe Ser Ser Leu Glu Ser Thr Pro Ser Phe Ala Ala Thr Ser
85 90 95

Ser Ser Ser Val Pro Gly Asn Thr Ala Phe Ser Phe Lys Ser Thr Ser
100 105 110

Ser Val Gly Val Phe Pro Ser Gly Ala Thr Phe Gly Pro Glu Thr Gly
115 120 125

Glu Val Ala Gly Ser Gly Phe Arg Lys Thr Glu Phe Lys Phe Lys Pro
130 135 140

Leu Glu Asn Ala Val Phe Lys Pro Ile Pro Gly Pro Glu Ser Glu Pro
145 150 155 160

Glu Lys Thr Gln Ser Gln Ile Ser Ser Gly Phe Phe Thr Phe Ser His
165 170 175

Pro Val Gly Ser Gly Ser Gly Gly Leu Thr Pro Phe Ser Phe Pro Gln
180 185 190

Val Thr Asn Ser Ser Val Thr Ser Ser Ser Phe Ile Phe Ser Lys Pro
195 200 205

Val Thr Ser Asn Thr Pro Ala Phe Ala Ser Pro Leu Ser Asn Gln Asn
210 215 220

Val Glu Glu Glu Lys Arg Val Ser Thr Ser Ala Phe Gly Ser Ser Asn
225 230 235 240

Ser Ser Phe Ser Thr Phe Pro Thr Ala Ser Pro Gly Ser Leu Gly Glu
245 250 255

Pro Phe Pro Ala Asn Lys Pro Ser Leu Arg Gln Gly Cys Glu Glu Ala
260 265 270

Ile Ser Gln Val Glu Pro Leu Pro Thr Leu Met Lys Gly Leu Lys Arg
275 280 285

Lys Glu Asp Gln Asp Arg Ser Pro Arg Arg His Cys His Glu Ala Ala

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Glu Asp Pro Asp Pro Leu Ser Arg Gly Asp His Pro Pro Asp Lys Arg 305 310 315 320		
Pro Val Arg Leu Asn Arg Pro Arg Gly Gly Thr Leu Phe Gly Arg Thr 325 330 335		
Ile Gln Glu Val Phe Lys Ser Asn Lys Glu Ala Gly Arg Leu Gly Ser 340 345 350		
Lys Glu Ser Lys Glu Ser Gly Phe Ala Glu Pro Gly Glu Ser Asp His 355 360 365		
Ala Ala Val Pro Gly Gly Ser Gln Ser Thr Met Val Pro Ser Arg Leu 370 375 380		
Pro Ala Val Thr Lys Glu Glu Glu Glu Ser Arg Asp Glu Lys Glu Asp 385 390 395 400		
Ser Leu Arg Gly Lys Ser Val Arg Gln Ser Lys Arg Arg Glu Glu Trp 405 410 415		
Ile Tyr Ser Leu Gly Gly Val Ser Ser Leu Glu Leu Thr Ala Ile Gln 420 425 430		
Cys Lys Asn Ile Pro Asp Tyr Leu Asn Asp Arg Ala Ile Leu Glu Lys 435 440 445		
His Phe Ser Lys Ile Ala Lys Val Gln Arg Val Phe Thr Arg Arg Ser 450 455 460		
Lys Lys Leu Ala Val Ile His Phe Phe Asp His Ala Ser Ala Ala Leu 465 470 475 480		
Ala Arg Lys Lys Gly Lys Gly Leu His Lys Asp Val Val Ile Phe Trp 485 490 495		
His Lys Lys Lys Ile Ser Pro Ser Lys Lys Leu Phe Pro Leu Lys Glu 500 505 510		
Lys Leu Gly Glu Ser Glu Ala Ser Gln Gly Ile Glu Asp Ser Pro Phe 515 520 525		

Gln His Ser Pro Leu Ser Lys Pro Ile Val Arg Pro Ala Ala Gly Ser
530 535 540

Leu Leu Ser Lys Ser Ser Pro Val Lys Lys Pro Ser Leu Leu Lys Met
545 550 555 560

His Gln Phe Glu Ala Asp Pro Phe Asp Ser Gly Ser Glu Gly Ser Glu
565 570 575

Gly Leu Gly Ser Cys Val Ser Ser Leu Ser Thr Leu Ile Gly Thr Val
580 585 590

Ala Asp Thr Ser Glu Glu Lys Tyr Arg Leu Leu Asp Gln Arg Asp Arg
595 600 605

Ile Met Arg Gln Ala Arg Val Lys Arg Thr Asp Leu Asp Lys Ala Arg
610 615 620

Ala Phe Val Gly Thr Cys Pro Asp Met Cys Pro Glu Lys Glu Arg Tyr
625 630 635 640

Leu Arg Glu Thr Arg Ser Gln Leu Ser Val Phe Glu Val Val Pro Gly
645 650 655

Thr Asp Gln Val Asp His Ala Ala Ala Val Lys Glu Tyr Ser Arg Ser
660 665 670

Ser Ala Asp Gln Glu Glu Pro Leu Pro His Glu Leu Arg Pro Ser Ala
675 680 685

Val Leu Ser Arg Thr Met Asp Tyr Leu Val Thr Gln Ile Met Asp Gln
690 695 700

Lys Glu Gly Ser Leu Arg Asp Trp Tyr Asp Phe Val Trp Asn Arg Thr
705 710 715 720

Arg Gly Ile Arg Lys Asp Ile Thr Gln Gln His Leu Cys Asp Pro Leu
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Thr Val Ser Leu Ile Glu Lys Cys Thr Arg Phe His Ile His Cys Ala
740 745 750

His Phe Met Cys Glu Glu Pro Met Ser Ser Phe Asp Ala Lys Ile Asn

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Asn	Glu	Asn	Met	Thr	Lys	Cys	Leu	Gln	Ser	Leu	Lys	Glu	Met	Tyr	Gln
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Gly	Tyr	Asn	Val	Leu	Leu	Asn	Leu	Asn	Lys	Gly	Asp	Ile	Leu	Arg	Glu
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Val	Gln	Gln	Phe	His	Pro	Asp	Val	Arg	Asn	Ser	Pro	Glu	Val	Asn	Phe
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Ala	Val	Gln	Ala	Phe	Ala	Ala	Leu	Asn	Ser	Asn	Asn	Phe	Val	Arg	Phe
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Phe	Lys	Leu	Val	Gln	Ser	Ala	Ser	Tyr	Leu	Asn	Ala	Cys	Leu	Leu	His
	850					855					860				
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Leu	Asn	Tyr	His	Gly	Leu	Thr	Val	Ala	Asp	Gly	Cys	Val	Glu	Leu	Asn
		915					920					925			
Arg	Ser	Ala	Phe	Leu	Glu	Pro	Glu	Gly	Leu	Cys	Lys	Ala	Arg	Lys	Ser
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945					950					955					960
Gly	Gly	Pro	Leu	Pro	Pro	Val	Pro	Arg	His	Thr	Pro	Val	Cys	Ser	Phe
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Asn	Ser	Gln	Asn	Lys	Tyr	Val	Gly	Glu	Ser	Leu	Ala	Thr	Glu	Leu	Pro
			980					985					990		

Ile Ser Thr Gln Arg Ala Gly Gly Asp Pro Ala Gly Gly Gly Arg Gly
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Glu Asp Cys Glu Ala Glu Val Asp Leu Pro Thr Leu Ala Val Leu
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Thr Gln Pro Glu Val Leu Leu Pro Lys Pro Ala Pro Val Tyr Ser
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Leu Gln Val Asp Cys Glu Glu Val Ser Ser Ala Gly Ala Ala Tyr
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Ile Thr Ala Ala Thr Thr Gly Ile Leu Arg His Val Ala Ala Glu
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Val Lys Ile Asp Gln Lys Val Arg Val Ala Arg Cys Cys Glu Ala
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Val Cys Ala His Leu Val Asp Leu Phe Leu Ala Glu Glu Ile Phe

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Tyr Leu Gln Arg Trp Arg	Glu	Ala Val Ala Ala	Arg Lys Lys Phe	
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Arg Arg Gln Met Arg Ala	Phe	Pro Ala Ala Pro	Cys Cys Val Asp	
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Val Asn Asp Arg Leu Gln	Ala	Leu Val Pro Ser	Ala Glu Cys Pro	
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Ile Thr Glu Glu Asn Leu	Ala	Lys Gly Leu Leu	Asp Leu Gly His	
1280	1285		1290	
Ala Gly Lys Val Gly Val	Ser	Cys Thr Arg Leu	Arg Arg Leu Arg	
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Asn Lys Thr Ala His Gln	Ile	Lys Val Gln His	Phe His Gln Gln	
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Leu Leu Arg Asn Ala Ala	Trp	Ala Pro Leu Asp	Leu Pro Ser Ile	
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Val Ser Glu His Leu Pro	Met	Lys Gln Lys Arg	Arg Phe Trp Lys	
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Leu Val Leu Val Leu Pro	Asp	Val Glu Glu Gln	Thr Pro Glu Ser	
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Pro Gly Arg Ile Leu Glu	Asn	Trp Leu Lys Val	Lys Phe Thr Gly	
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Asp Asp Ser Met Val Gly	Asp	Ile Gly Asp Asn	Ala Gly Asp Ile	
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Gln Thr Leu Ser Val Phe	Asn	Thr Leu Ser Ser	Lys Gly Asp Gln	
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 Gly Thr Ser Gly Leu Met Leu Leu Leu Pro Pro Lys Val Lys Ser
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 Ser Gln Glu Pro Ser Thr Ile Ile Glu Leu Phe Asn Ser Val Leu
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 Gln Phe Leu Ala Ser Val Val Ser Ser Glu Gln Leu Cys Asp Ile
 1610 1615 1620

 Ser Trp Pro Val Met Glu Phe Ala Glu Val Gly Gly Ser Gln Leu
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 Leu Pro His Leu His Trp Asn Ser Pro Glu His Leu Ala Trp Leu

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Lys Gln Ala Val Leu Gly Phe Gln Leu Pro Gln Met Asp Leu Pro	1655	1660		1665
Pro Pro Gly Ala Pro Trp Leu Pro Val Cys Ser Met Val Ile Gln	1670	1675		1680
Tyr Thr Ser Gln Ile Pro Ser Ser Ser Gln Thr Gln Pro Val Leu	1685	1690		1695
Gln Ser Gln Ala Glu Asn Leu Leu Cys Arg Thr Tyr Gln Lys Trp	1700	1705		1710
Lys Asn Lys Ser Leu Ser Pro Gly Gln Glu Leu Gly Pro Ser Val	1715	1720		1725
Ala Glu Ile Pro Trp Asp Asp Ile Ile Thr Leu Cys Ile Asn His	1730	1735		1740
Lys Leu Arg Asp Trp Thr Pro Pro Arg Leu Pro Val Thr Leu Glu	1745	1750		1755
Ala Leu Ser Glu Asp Gly Gln Ile Cys Val Tyr Phe Phe Lys Asn	1760	1765		1770
Leu Leu Arg Lys Tyr His Val Pro Ser Ser Trp Glu Gln Ala Arg	1775	1780		1785
Met Gln Thr Gln Arg Glu Leu Gln Leu Ser His Gly Arg Ser Gly	1790	1795		1800
Met Arg Ser Ile His Pro Pro Thr Ser Thr Phe Pro Thr Pro Leu	1805	1810		1815
Leu His Val His Gln Lys Gly Lys Lys Lys Glu Glu Ser Gly Arg	1820	1825		1830
Glu Gly Ser Leu Ser Thr Glu Asp Leu Leu Arg Gly Ala Ser Ala	1835	1840		1845
Glu Glu Leu Leu Ala Gln Ser Leu Ser Ser Ser Leu Leu Glu Glu	1850	1855		1860

Lys Glu Glu Asn Lys Arg Phe Glu Asp Gln Leu Gln Gln Trp Leu
 1865 1870 1875

Ser Gln Asp Ser Gln Ala Phe Thr Glu Ser Thr Arg Leu Pro Leu
 1880 1885 1890

Tyr Leu Pro Gln Thr Leu Val Ser Phe Pro Asp Ser Ile Lys Thr
 1895 1900 1905

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 1910 1915 1920

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 1925 1930 1935

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Asp Ser Asp Pro Leu Ser Arg Gly Asp His Pro Pro Asp Lys Arg Pro	
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Val Arg Leu Asn Arg Pro Arg Gly Gly Thr Leu Phe Gly Arg Thr Ile	
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His Phe Gly Lys Ile Ala Lys Val Gln Arg Ile Phe Thr Arg Arg Ser	
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Lys Lys Leu Ala Val Val His Phe Phe Asp His Ala Ser Ala Ala Leu	
475 480 485	
gct aga aag aag ggg aaa agt ttg cat aaa gac atg gct atc ttt tgg	1543
Ala Arg Lys Lys Gly Lys Ser Leu His Lys Asp Met Ala Ile Phe Trp	
490 495 500	
cac agg aag aaa ata agc ccc aat aag aaa ccc ttt tcc ctg aag gag	1591
His Arg Lys Lys Ile Ser Pro Asn Lys Lys Pro Phe Ser Leu Lys Glu	

505					510					515							
aag	aaa	cca	ggt	gac	ggt	gaa	gtc	agc	ccg	agc	aca	gag	gat	gca	ccc	1639	
Lys	Lys	Pro	Gly	Asp	Gly	Glu	Val	Ser	Pro	Ser	Thr	Glu	Asp	Ala	Pro		
520					525					530							
ttt	cag	cac	tct	cct	ctt	ggc	aag	gcc	gca	ggg	agg	act	ggt	gct	agc	1687	
Phe	Gln	His	Ser	Pro	Leu	Gly	Lys	Ala	Ala	Gly	Arg	Thr	Gly	Ala	Ser		
535					540					545					550		
agc	ctc	ctg	aat	aaa	agc	tct	cca	gtg	aag	aag	cca	agt	ctt	cta	aag	1735	
Ser	Leu	Leu	Asn	Lys	Ser	Ser	Pro	Val	Lys	Lys	Pro	Ser	Leu	Leu	Lys		
555					560					565							
gcc	cac	caa	ttc	gag	gga	gac	tct	ttt	gac	tca	gcc	tcc	gag	ggc	tcc	1783	
Ala	His	Gln	Phe	Glu	Gly	Asp	Ser	Phe	Asp	Ser	Ala	Ser	Glu	Gly	Ser		
570					575					580							
gag	ggc	ctc	ggg	cca	tgt	gtg	ctc	tcc	ctc	agt	acc	ctg	ata	ggc	act	1831	
Glu	Gly	Leu	Gly	Pro	Cys	Val	Leu	Ser	Leu	Ser	Thr	Leu	Ile	Gly	Thr		
585					590					595							
gtg	gct	gag	aca	tcc	aag	gag	aag	tac	cgc	ctg	ctt	gac	cag	aga	gac	1879	
Val	Ala	Glu	Thr	Ser	Lys	Glu	Lys	Tyr	Arg	Leu	Leu	Asp	Gln	Arg	Asp		
600					605					610							
agg	atc	atg	cgg	caa	gct	cgg	gtg	aag	aga	acc	gat	ctg	gac	aaa	gcg	1927	
Arg	Ile	Met	Arg	Gln	Ala	Arg	Val	Lys	Arg	Thr	Asp	Leu	Asp	Lys	Ala		
615					620					625					630		
agg	act	ttt	gtt	ggc	acc	tgc	ctg	gat	atg	tgt	cct	gag	aag	gag	agg	1975	
Arg	Thr	Phe	Val	Gly	Thr	Cys	Leu	Asp	Met	Cys	Pro	Glu	Lys	Glu	Arg		
635					640					645							
tac	atg	cgg	gag	acc	cgt	agc	cag	ctg	agc	gtg	ttc	gaa	gtg	gtc	cca	2023	
Tyr	Met	Arg	Glu	Thr	Arg	Ser	Gln	Leu	Ser	Val	Phe	Glu	Val	Val	Pro		
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ggg	act	gac	cag	gtg	gac	cac	gca	gca	gct	gtg	aaa	gag	tac	agt	cgg	2071	
Gly	Thr	Asp	Gln	Val	Asp	His	Ala	Ala	Ala	Val	Lys	Glu	Tyr	Ser	Arg		
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Ser	Ser	Ala	Asp	Gln	Glu	Glu	Pro	Leu	Pro	His	Glu	Leu	Arg	Pro	Leu		
680					685					690							
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Pro	Val	Leu	Ser	Arg	Thr	Met	Asp	Tyr	Leu	Val	Thr	Gln	Ile	Met	Asp		
695					700					705					710		
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Gln	Lys	Glu	Gly	Ser	Leu	Arg	Asp	Trp	Tyr	Asp	Phe	Val	Trp	Asn	Arg		
715					720					725							
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Thr	Arg	Gly	Ile	Arg	Lys	Asp	Ile	Thr	Gln	Gln	His	Leu	Cys	Asp	Pro		
730					735					740							

ctg acg gtg tcc ctg att gag aag tgc acc cgg ttt cac atc cac tgt	2311
Leu Thr Val Ser Leu Ile Glu Lys Cys Thr Arg Phe His Ile His Cys	
745 750 755	
gcc cac ttc atg tgt gag gag ccc atg tcc tcc ttt gat gcc aag atc	2359
Ala His Phe Met Cys Glu Glu Pro Met Ser Ser Phe Asp Ala Lys Ile	
760 765 770	
aat aat gag aac atg acc aag tgc ctg cag agc ctg aag gag atg tac	2407
Asn Asn Glu Asn Met Thr Lys Cys Leu Gln Ser Leu Lys Glu Met Tyr	
775 780 785 790	
cag gac ctg aga aac aag ggt gtc ttc tgt gcc agc gaa gcg gag ttc	2455
Gln Asp Leu Arg Asn Lys Gly Val Phe Cys Ala Ser Glu Ala Glu Phe	
795 800 805	
cag ggc tac aat gtt ctg ctc agt ctc aac aag gga gac atc cta aga	2503
Gln Gly Tyr Asn Val Leu Leu Ser Leu Asn Lys Gly Asp Ile Leu Arg	
810 815 820	
gaa gta caa cag ttc cat cct gct gtt aga aac tca tct gag gtg aaa	2551
Glu Val Gln Gln Phe His Pro Ala Val Arg Asn Ser Ser Glu Val Lys	
825 830 835	
ttt gct gtt cag gct ttt gct gca ttg aac agt aat aat ttt gtg aga	2599
Phe Ala Val Gln Ala Phe Ala Ala Leu Asn Ser Asn Asn Phe Val Arg	
840 845 850	
ttt ttc aaa ctg gtc cag tca gct tct tac ctg aac gct tgt ctt tta	2647
Phe Phe Lys Leu Val Gln Ser Ala Ser Tyr Leu Asn Ala Cys Leu Leu	
855 860 865 870	
cac tgt tac ttc agt cag atc cgc aag gat gct ctc cgg gcg ctc aac	2695
His Cys Tyr Phe Ser Gln Ile Arg Lys Asp Ala Leu Arg Ala Leu Asn	
875 880 885	
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Phe Ala Tyr Thr Val Ser Thr Gln Arg Ser Thr Ile Phe Pro Leu Asp	
890 895 900	
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Gly Val Val Arg Met Leu Leu Phe Arg Asp Cys Glu Glu Ala Thr Asp	
905 910 915	
ttc ctc acc tgc cac ggc ctc acc gtt tcc gac ggc tgt gtg gag ctg	2839
Phe Leu Thr Cys His Gly Leu Thr Val Ser Asp Gly Cys Val Glu Leu	
920 925 930	
aac cgg tct gca ttc ctg gaa cca gag gga tta tcc aag acc agg aag	2887
Asn Arg Ser Ala Phe Leu Glu Pro Glu Gly Leu Ser Lys Thr Arg Lys	
935 940 945 950	
tcg gtg ttt att act agg aag ctg acg gtg tca gtc ggg gaa att gtg	2935
Ser Val Phe Ile Thr Arg Lys Leu Thr Val Ser Val Gly Glu Ile Val	
955 960 965	
aac gga ggg cca ttg ccc ccc gtc cct cgt cac acc cct gtg tgc agc	2983
Asn Gly Gly Pro Leu Pro Pro Val Pro Arg His Thr Pro Val Cys Ser	

970	975	980	
ttc aac tcc cag aac aag tac atc ggg gag agc ctg gcc gcg gag ctg Phe Asn Ser Gln Asn Lys Tyr Ile Gly Glu Ser Leu Ala Ala Glu Leu 985 990 995			3031
ccc gtc agc acc cag aga ccc ggc tcc gac aca gtg ggc gga ggg Pro Val Ser Thr Gln Arg Pro Gly Ser Asp Thr Val Gly Gly Gly 1000 1005 1010			3076
aga gga gag gag tgt ggt gta gag ccg gat gca ccc ctg tcc agt Arg Gly Glu Glu Cys Gly Val Glu Pro Asp Ala Pro Leu Ser Ser 1015 1020 1025			3121
ctc cca cag tct cta cca gcc cct gcg ccc tca cca gtg cct ctg Leu Pro Gln Ser Leu Pro Ala Pro Ala Pro Ser Pro Val Pro Leu 1030 1035 1040			3166
cct cct gtc ctg gca ctg acc ccg tct gtg gcg ccc agc ctc ttc Pro Pro Val Leu Ala Leu Thr Pro Ser Val Ala Pro Ser Leu Phe 1045 1050 1055			3211
cag ctg tct gtg cag cct gaa cca ccg cct cca gag ccc gtg ccc Gln Leu Ser Val Gln Pro Glu Pro Pro Pro Pro Glu Pro Val Pro 1060 1065 1070			3256
atg tac tct gac gag gac ctg gcg cag gtg gtg gac gag ctc atc Met Tyr Ser Asp Glu Asp Leu Ala Gln Val Val Asp Glu Leu Ile 1075 1080 1085			3301
cag gag gcc ctg cag agg gac tgt gag gaa gtt ggc tct gcg ggt Gln Glu Ala Leu Gln Arg Asp Cys Glu Glu Val Gly Ser Ala Gly 1090 1095 1100			3346
gct gcc tac gca gct gcc gcc ctg ggt gtt tct aat gct gct atg Ala Ala Tyr Ala Ala Ala Ala Leu Gly Val Ser Asn Ala Ala Met 1105 1110 1115			3391
gag gat ttg tta aca gct gca acc acg ggc att ttg agg cac att Glu Asp Leu Leu Thr Ala Ala Thr Thr Gly Ile Leu Arg His Ile 1120 1125 1130			3436
gca gct gaa gaa gtg tct aag gaa aga gag cga agg gag cag gag Ala Ala Glu Glu Val Ser Lys Glu Arg Glu Arg Arg Glu Gln Glu 1135 1140 1145			3481
agg cag cgg gct gaa gag gaa agg ttg aaa caa gag aga gag ctg Arg Gln Arg Ala Glu Glu Glu Arg Leu Lys Gln Glu Arg Glu Leu 1150 1155 1160			3526
gtg tta agt gag ctg agc cag ggc ctg gcc gtg gag ctg atg gaa Val Leu Ser Glu Leu Ser Gln Gly Leu Ala Val Glu Leu Met Glu 1165 1170 1175			3571
cgc gtg atg atg gag ttt gtg agg gaa acc tgc tcc cag gag ttg Arg Val Met Met Glu Phe Val Arg Glu Thr Cys Ser Gln Glu Leu 1180 1185 1190			3616

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Lys Asn Ala Val Glu Thr Asp	Gln Arg Val Arg Val Ala Arg Cys	
1195	1200 1205	
tgt gag gat gtc tgt gcc cac	tta gtg gac ttg ttt ctc gtg gag	3706
Cys Glu Asp Val Cys Ala His	Leu Val Asp Leu Phe Leu Val Glu	
1210	1215 1220	
gaa atc ttc cag act gca aag	gag acc ctc cag gag ctt cag tgc	3751
Glu Ile Phe Gln Thr Ala Lys	Glu Thr Leu Gln Glu Leu Gln Cys	
1225	1230 1235	
ttc tgc aag tat cta cag cgg	tgg agg gaa gct gtc aca gcc cgc	3796
Phe Cys Lys Tyr Leu Gln Arg	Trp Arg Glu Ala Val Thr Ala Arg	
1240	1245 1250	
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Lys Lys Leu Arg Arg Gln Met	Arg Ala Phe Pro Ala Ala Pro Cys	
1255	1260 1265	
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Cys Val Asp Val Ser Asp Arg	Leu Arg Ala Leu Ala Pro Ser Ala	
1270	1275 1280	
gag tgc ccc att gct gaa gag	aac ctg gcc agg ggc ctc ctg gac	3931
Glu Cys Pro Ile Ala Glu Glu	Asn Leu Ala Arg Gly Leu Leu Asp	
1285	1290 1295	
ctg ggc cat gca ggg aga ttg	ggc atc tct tgc acc agg tta agg	3976
Leu Gly His Ala Gly Arg Leu	Gly Ile Ser Cys Thr Arg Leu Arg	
1300	1305 1310	
cgg ctc aga aac aag aca gct	cac cag atg aag gtt cag cac ttc	4021
Arg Leu Arg Asn Lys Thr Ala	His Gln Met Lys Val Gln His Phe	
1315	1320 1325	
tac cag cag ctg ctg agt gat	gtg gca tgg gcg tct ctg gac ctg	4066
Tyr Gln Gln Leu Leu Ser Asp	Val Ala Trp Ala Ser Leu Asp Leu	
1330	1335 1340	
cca tcc ctc gtg gct gag cac	ctc cct ggg agg cag gag cat gtg	4111
Pro Ser Leu Val Ala Glu His	Leu Pro Gly Arg Gln Glu His Val	
1345	1350 1355	
ttt tgg aag ctg gtg ctg gtg	ttg ccg gat gta gag gag cag tcc	4156
Phe Trp Lys Leu Val Leu Val	Leu Pro Asp Val Glu Glu Gln Ser	
1360	1365 1370	
cca gag agt tgt ggc aga att	cta gca aat tgg tta aaa gtc aag	4201
Pro Glu Ser Cys Gly Arg Ile	Leu Ala Asn Trp Leu Lys Val Lys	
1375	1380 1385	
ttc atg gga gat gaa ggc tca	gtg gat gac aca tcc agc gat gct	4246
Phe Met Gly Asp Glu Gly Ser	Val Asp Asp Thr Ser Ser Asp Ala	
1390	1395 1400	
ggt ggg att cag acg ctt tcg	ctt ttc aac tca ctt agc agc aaa	4291
Gly Gly Ile Gln Thr Leu Ser	Leu Phe Asn Ser Leu Ser Ser Lys	

1405	1410	1415	
ggg gat cag atg att tct gtt aac gtg tgt ata aag gtg gcc cat 4336			
Gly Asp Gln Met Ile Ser Val Asn Val Cys Ile Lys Val Ala His			
1420	1425	1430	
ggc gcc ctc agt gat ggt gcc att gat gct gtg gag aca cag aag 4381			
Gly Ala Leu Ser Asp Gly Ala Ile Asp Ala Val Glu Thr Gln Lys			
1435	1440	1445	
gac ctc ctg gga gcc agt ggg ctc atg ctg ctg ctt ccc ccc aaa 4426			
Asp Leu Leu Gly Ala Ser Gly Leu Met Leu Leu Leu Pro Pro Lys			
1450	1455	1460	
atg aag agt gag gac atg gca gag gag gac gtg tac tgg ctg tcg 4471			
Met Lys Ser Glu Asp Met Ala Glu Glu Asp Val Tyr Trp Leu Ser			
1465	1470	1475	
gcc ttg ctg cag ctc aag cag ctc ctg cag gct aag ccc ttc cag 4516			
Ala Leu Leu Gln Leu Lys Gln Leu Leu Gln Ala Lys Pro Phe Gln			
1480	1485	1490	
cct gcg ctt cct ctg gtg gtt ctt gtg cct agc cca gga ggg gac 4561			
Pro Ala Leu Pro Leu Val Val Leu Val Pro Ser Pro Gly Gly Asp			
1495	1500	1505	
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Ala Val Glu Lys Glu Val Glu Asp Gly Leu Met Leu Gln Asp Leu			
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Val Ser Ala Lys Leu Ile Ser Asp Tyr Thr Val Thr Glu Ile Pro			
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gat acc att aat gat cta caa ggt tca act aag gtt ttg caa gca 4696			
Asp Thr Ile Asn Asp Leu Gln Gly Ser Thr Lys Val Leu Gln Ala			
1540	1545	1550	
gtg cag tgg ctg gtt tcc cac tgc ccc cat tcc ctt gac ctc tgc 4741			
Val Gln Trp Leu Val Ser His Cys Pro His Ser Leu Asp Leu Cys			
1555	1560	1565	
tgc cag act ctc att cag tac gtc gaa gac ggg att ggc cat gag 4786			
Cys Gln Thr Leu Ile Gln Tyr Val Glu Asp Gly Ile Gly His Glu			
1570	1575	1580	
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Phe Ser Gly Arg Phe Phe His Asp Arg Arg Glu Arg Arg Leu Gly			
1585	1590	1595	
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Gly Leu Ala Ser Gln Glu Pro Gly Ala Ile Ile Glu Leu Phe Asn			
1600	1605	1610	
agt gtg ctg cag ttc ctg gct tct gtg gtg tcc tct gaa cag ctg 4921			
Ser Val Leu Gln Phe Leu Ala Ser Val Val Ser Ser Glu Gln Leu			
1615	1620	1625	

tgt gac	ctg tcc	tgg cct	gtc	act gag	ttt gct	gag	gca ggg	ggc	4966
Cys Asp	Leu Ser	Trp Pro	Val	Thr Glu	Phe Ala	Glu	Ala Gly	Gly	
1630			1635			1640			
agc cgg	ctg ctt	cct cac	ctg	cac tgg	aat gcc	cca	gag cac	ctg	5011
Ser Arg	Leu Leu	Pro His	Leu	His Trp	Asn Ala	Pro	Glu His	Leu	
1645			1650			1655			
gcc tgg	ctg aag	cag gct	gtg	ctc ggg	ttc cag	ctt	ccg cag	atg	5056
Ala Trp	Leu Lys	Gln Ala	Val	Leu Gly	Phe Gln	Leu	Pro Gln	Met	
1660			1665			1670			
gac ctt	cca ccc	ctg ggg	gcc	ccc tgg	ctc	ccc	gtg tgc	tcc atg	5101
Asp Leu	Pro Pro	Leu Gly	Ala	Pro Trp	Leu Pro	Val	Cys Ser	Met	
1675			1680			1685			
gtt gtc	cag tac	gcc tcc	cag	atc ccc	agc tca	cgc	cag aca	cag	5146
Val Val	Gln Tyr	Ala Ser	Gln	Ile Pro	Ser Ser	Arg	Gln Thr	Gln	
1690			1695			1700			
cct gtc	ctc cag	tcc cag	gtg	gag aac	ctg ctc	cac	aga acc	tac	5191
Pro Val	Leu Gln	Ser Gln	Val	Glu Asn	Leu Leu	His	Arg Thr	Tyr	
1705			1710			1715			
tgt agg	tgg aag	agc aag	agt	ccc tcc	cca gtc	cat	ggg gca	ggc	5236
Cys Arg	Trp Lys	Ser Lys	Ser	Pro Ser	Pro Val	His	Gly Ala	Gly	
1720			1725			1730			
ccc tcg	gtc atg	gag atc	cca	tgg gat	gat ctt	atc	gcc ttg	tgt	5281
Pro Ser	Val Met	Glu Ile	Pro	Trp Asp	Asp Leu	Ile	Ala Leu	Cys	
1735			1740			1745			
atc aac	cac aag	ctg aga	gac	tgg acg	ccc ccc	cgg	ctt cct	gtt	5326
Ile Asn	His Lys	Leu Arg	Asp	Trp Thr	Pro Pro	Arg	Leu Pro	Val	
1750			1755			1760			
aca tca	gag gcg	ctg agt	gaa	gat ggt	cag ata	tgt	gtg tat	ttt	5371
Thr Ser	Glu Ala	Leu Ser	Glu	Asp Gly	Gln Ile	Cys	Val Tyr	Phe	
1765			1770			1775			
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Phe Lys	Asn Asp	Leu Lys	Lys	Tyr Asp	Val Pro	Leu	Ser Trp	Glu	
1780			1785			1790			
caa gcc	agg ttg	cag acg	cag	aag gag	cta cag	ctg	aga gag	gga	5461
Gln Ala	Arg Leu	Gln Thr	Gln	Lys Glu	Leu Gln	Leu	Arg Glu	Gly	
1795			1800			1805			
cgt ttg	gca ata	aag cct	ttt	cat cct	tct gca	aac	aat ttt	ccc	5506
Arg Leu	Ala Ile	Lys Pro	Phe	His Pro	Ser Ala	Asn	Asn Phe	Pro	
1810			1815			1820			
ata cca	ttg ctt	cac atg	cac	cgt aac	tgg aag	agg	agc aca	gag	5551
Ile Pro	Leu Leu	His Met	His	Arg Asn	Trp Lys	Arg	Ser Thr	Glu	
1825			1830			1835			
tgt gct	caa gag	ggg agg	att	ccc agc	aca gag	gat	ctg atg	cga	5596
Cys Ala	Gln Glu	Gly Arg	Ile	Pro Ser	Thr Glu	Asp	Leu Met	Arg	

1840	1845	1850	
gga gct tct gct gag gag ctc	ttg gcg cag tgt	ttg tcg agc agt	5641
Gly Ala Ser Ala Glu Glu Leu	Leu Ala Gln Cys	Leu Ser Ser Ser	
1855	1860	1865	
ctg ctg ctg gag aaa gaa gag	aac aag agg ttt	gaa gat cag ctt	5686
Leu Leu Leu Glu Lys Glu Glu	Asn Lys Arg Phe	Glu Asp Gln Leu	
1870	1875	1880	
cag caa tgg ttg tct gaa gac	tca gga gca ttt	acg gat tta act	5731
Gln Gln Trp Leu Ser Glu Asp	Ser Gly Ala Phe	Thr Asp Leu Thr	
1885	1890	1895	
tcc ctt ccc ctc tat ctt cct	cag act cta gtg	tct ctt tct cac	5776
Ser Leu Pro Leu Tyr Leu Pro	Gln Thr Leu Val	Ser Leu Ser His	
1900	1905	1910	
act att gaa cct gtg atg aaa	aca tct gta act	act agc cca cag	5821
Thr Ile Glu Pro Val Met Lys	Thr Ser Val Thr	Thr Ser Pro Gln	
1915	1920	1925	
agt gac atg atg agg gag caa	ctg cag ctg tca	gag gcg aca gga	5866
Ser Asp Met Met Arg Glu Gln	Leu Gln Leu Ser	Glu Ala Thr Gly	
1930	1935	1940	
acg tgt cta ggc gaa cga cta	aag cac ctg gaa	agg ctg atc cgg	5911
Thr Cys Leu Gly Glu Arg Leu	Lys His Leu Glu	Arg Leu Ile Arg	
1945	1950	1955	
agt tca agg gaa gag gaa gtt	gcc tct gag ctc	cat ctc tct gcg	5956
Ser Ser Arg Glu Glu Glu Val	Ala Ser Glu Leu	His Leu Ser Ala	
1960	1965	1970	
ctg cta gac atg gtg gac att	tgagcagcct gacctgtggg	gaggggggtct	6007
Leu Leu Asp Met Val Asp Ile			
1975	1980		
ctcccgaaga gtttctgttt ttactcaaaa	taatgttatt ctcagatgct	tgatgcactg	6067
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 <212> PRT
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Ala	Ser	Ser	Ser	Asn	Val	Gly	Thr	Leu	Pro	Ser	Lys	Pro	Pro	Phe	Arg
			20					25					30		

Phe Gly Gln Pro Ser Leu Phe Gly Gln Asn Ser Thr Leu Ser Gly Lys
35 40 45

Ser Ser Gly Phe Ser Gln Val Ser Ser Phe Pro Ala Ser Ser Gly Val
50 55 60

Ser His Ser Ser Ser Val Gln Thr Leu Gly Phe Thr Gln Thr Ser Ser
65 70 75 80

Val Gly Pro Phe Ser Gly Leu Glu His Thr Ser Thr Phe Val Ala Thr
85 90 95

Ser Gly Pro Ser Ser Ser Ser Val Leu Gly Asn Thr Gly Phe Ser Phe
100 105 110

Lys Ser Pro Thr Ser Val Gly Ala Phe Pro Ser Thr Ser Ala Phe Gly
115 120 125

Gln Glu Ala Gly Glu Ile Val Asn Ser Gly Phe Gly Lys Thr Glu Phe
130 135 140

Ser Phe Lys Pro Leu Glu Asn Ala Val Phe Lys Pro Ile Leu Gly Ala
145 150 155 160

Glu Ser Glu Pro Glu Lys Thr Gln Ser Gln Ile Ala Ser Gly Phe Phe
165 170 175

Thr Phe Ser His Pro Ile Ser Ser Ala Pro Gly Gly Leu Ala Pro Phe
180 185 190

Ser Phe Pro Gln Val Thr Ser Ser Ser Ala Thr Thr Ser Asn Phe Thr
195 200 205

Phe Ser Lys Pro Val Ser Ser Asn Asn Ser Leu Ser Ala Phe Thr Pro
210 215 220

Ala Leu Ser Asn Gln Asn Val Glu Glu Glu Lys Arg Gly Pro Lys Ser
225 230 235 240

Ile Phe Gly Ser Ser Asn Asn Ser Phe Ser Ser Phe Pro Val Ser Ser
245 250 255

Ala Val Leu Gly Glu Pro Phe Gln Ala Ser Lys Ala Gly Val Arg Gln
260 265 270

Gly Cys Glu Glu Ala Val Ser Gln Val Glu Pro Leu Pro Ser Leu Met
275 280 285

Lys Gly Leu Lys Arg Lys Glu Asp Gln Asp Arg Ser Pro Arg Arg His
290 295 300

Gly His Glu Pro Ala Glu Asp Ser Asp Pro Leu Ser Arg Gly Asp His
305 310 315 320

Pro Pro Asp Lys Arg Pro Val Arg Leu Asn Arg Pro Arg Gly Gly Thr
325 330 335

Leu Phe Gly Arg Thr Ile Gln Asp Val Phe Lys Ser Asn Lys Glu Val
340 345 350

Gly Arg Leu Gly Asn Lys Glu Ala Lys Lys Glu Thr Gly Phe Val Glu
355 360 365

Ser Ala Glu Ser Asp His Met Ala Ile Pro Gly Gly Asn Gln Ser Val
370 375 380

Leu Ala Pro Ser Arg Ile Pro Gly Val Asn Lys Glu Glu Glu Thr Glu
385 390 395 400

Ser Arg Glu Lys Lys Glu Asp Ser Leu Arg Gly Thr Pro Ala Arg Gln
405 410 415

Ser Asn Arg Ser Glu Ser Thr Asp Ser Leu Gly Gly Leu Ser Pro Ser
420 425 430

Glu Val Thr Ala Ile Gln Cys Lys Asn Ile Pro Asp Tyr Leu Asn Asp
435 440 445

Arg Thr Ile Leu Glu Asn His Phe Gly Lys Ile Ala Lys Val Gln Arg
450 455 460

Ile Phe Thr Arg Arg Ser Lys Lys Leu Ala Val Val His Phe Phe Asp
465 470 475 480

His Ala Ser Ala Ala Leu Ala Arg Lys Lys Gly Lys Ser Leu His Lys
485 490 495

Asp Met Ala Ile Phe Trp His Arg Lys Lys Ile Ser Pro Asn Lys Lys
500 505 510

Pro Phe Ser Leu Lys Glu Lys Lys Pro Gly Asp Gly Glu Val Ser Pro
515 520 525

Ser Thr Glu Asp Ala Pro Phe Gln His Ser Pro Leu Gly Lys Ala Ala
530 535 540

Gly Arg Thr Gly Ala Ser Ser Leu Leu Asn Lys Ser Ser Pro Val Lys
545 550 555 560

Lys Pro Ser Leu Leu Lys Ala His Gln Phe Glu Gly Asp Ser Phe Asp
565 570 575

Ser Ala Ser Glu Gly Ser Glu Gly Leu Gly Pro Cys Val Leu Ser Leu
580 585 590

Ser Thr Leu Ile Gly Thr Val Ala Glu Thr Ser Lys Glu Lys Tyr Arg
595 600 605

Leu Leu Asp Gln Arg Asp Arg Ile Met Arg Gln Ala Arg Val Lys Arg
610 615 620

Thr Asp Leu Asp Lys Ala Arg Thr Phe Val Gly Thr Cys Leu Asp Met
625 630 635 640

Cys Pro Glu Lys Glu Arg Tyr Met Arg Glu Thr Arg Ser Gln Leu Ser
645 650 655

Val Phe Glu Val Val Pro Gly Thr Asp Gln Val Asp His Ala Ala Ala
660 665 670

Val Lys Glu Tyr Ser Arg Ser Ser Ala Asp Gln Glu Glu Pro Leu Pro
675 680 685

His Glu Leu Arg Pro Leu Pro Val Leu Ser Arg Thr Met Asp Tyr Leu
690 695 700

Val Thr Gln Ile Met Asp Gln Lys Glu Gly Ser Leu Arg Asp Trp Tyr
705 710 715 720

Asp Phe Val Trp Asn Arg Thr Arg Gly Ile Arg Lys Asp Ile Thr Gln
725 730 735

Gln His Leu Cys Asp Pro Leu Thr Val Ser Leu Ile Glu Lys Cys Thr
740 745 750

Arg Phe His Ile His Cys Ala His Phe Met Cys Glu Glu Pro Met Ser
755 760 765

Ser Phe Asp Ala Lys Ile Asn Asn Glu Asn Met Thr Lys Cys Leu Gln
770 775 780

Ser Leu Lys Glu Met Tyr Gln Asp Leu Arg Asn Lys Gly Val Phe Cys
785 790 795 800

Ala Ser Glu Ala Glu Phe Gln Gly Tyr Asn Val Leu Leu Ser Leu Asn
805 810 815

Lys Gly Asp Ile Leu Arg Glu Val Gln Gln Phe His Pro Ala Val Arg
820 825 830

Asn Ser Ser Glu Val Lys Phe Ala Val Gln Ala Phe Ala Ala Leu Asn
835 840 845

Ser Asn Asn Phe Val Arg Phe Phe Lys Leu Val Gln Ser Ala Ser Tyr
850 855 860

Leu Asn Ala Cys Leu Leu His Cys Tyr Phe Ser Gln Ile Arg Lys Asp
865 870 875 880

Ala Leu Arg Ala Leu Asn Phe Ala Tyr Thr Val Ser Thr Gln Arg Ser
885 890 895

Thr Ile Phe Pro Leu Asp Gly Val Val Arg Met Leu Leu Phe Arg Asp
900 905 910

Cys Glu Glu Ala Thr Asp Phe Leu Thr Cys His Gly Leu Thr Val Ser
915 920 925

Asp Gly Cys Val Glu Leu Asn Arg Ser Ala Phe Leu Glu Pro Glu Gly
930 935 940

Leu Ser Lys Thr Arg Lys Ser Val Phe Ile Thr Arg Lys Leu Thr Val
945 950 955 960

Ser Val Gly Glu Ile Val Asn Gly Gly Pro Leu Pro Pro Val Pro Arg
965 970 975

His Thr Pro Val Cys Ser Phe Asn Ser Gln Asn Lys Tyr Ile Gly Glu
980 985 990

Ser Leu Ala Ala Glu Leu Pro Val Ser Thr Gln Arg Pro Gly Ser Asp
995 1000 1005

Thr Val Gly Gly Gly Arg Gly Glu Glu Cys Gly Val Glu Pro Asp
1010 1015 1020

Ala Pro Leu Ser Ser Leu Pro Gln Ser Leu Pro Ala Pro Ala Pro
1025 1030 1035

Ser Pro Val Pro Leu Pro Pro Val Leu Ala Leu Thr Pro Ser Val
1040 1045 1050

Ala Pro Ser Leu Phe Gln Leu Ser Val Gln Pro Glu Pro Pro Pro
1055 1060 1065

Pro Glu Pro Val Pro Met Tyr Ser Asp Glu Asp Leu Ala Gln Val
1070 1075 1080

Val Asp Glu Leu Ile Gln Glu Ala Leu Gln Arg Asp Cys Glu Glu
1085 1090 1095

Val Gly Ser Ala Gly Ala Ala Tyr Ala Ala Ala Ala Leu Gly Val
1100 1105 1110

Ser Asn Ala Ala Met Glu Asp Leu Leu Thr Ala Ala Thr Thr Gly
1115 1120 1125

Ile Leu Arg His Ile Ala Ala Glu Glu Val Ser Lys Glu Arg Glu
1130 1135 1140

Arg Arg Glu Gln Glu Arg Gln Arg Ala Glu Glu Glu Arg Leu Lys
1145 1150 1155

Gln Glu Arg Glu Leu Val Leu Ser Glu Leu Ser Gln Gly Leu Ala
1160 1165 1170

Val Glu Leu Met Glu Arg Val Met Met Glu Phe Val Arg Glu Thr
1175 1180 1185

Cys	Ser	Gln	Glu	Leu	Lys	Asn	Ala	Val	Glu	Thr	Asp	Gln	Arg	Val
1190						1195					1200			
Arg	Val	Ala	Arg	Cys	Cys	Glu	Asp	Val	Cys	Ala	His	Leu	Val	Asp
1205						1210					1215			
Leu	Phe	Leu	Val	Glu	Glu	Ile	Phe	Gln	Thr	Ala	Lys	Glu	Thr	Leu
1220						1225					1230			
Gln	Glu	Leu	Gln	Cys	Phe	Cys	Lys	Tyr	Leu	Gln	Arg	Trp	Arg	Glu
1235						1240					1245			
Ala	Val	Thr	Ala	Arg	Lys	Lys	Leu	Arg	Arg	Gln	Met	Arg	Ala	Phe
1250						1255					1260			
Pro	Ala	Ala	Pro	Cys	Cys	Val	Asp	Val	Ser	Asp	Arg	Leu	Arg	Ala
1265						1270					1275			
Leu	Ala	Pro	Ser	Ala	Glu	Cys	Pro	Ile	Ala	Glu	Glu	Asn	Leu	Ala
1280						1285					1290			
Arg	Gly	Leu	Leu	Asp	Leu	Gly	His	Ala	Gly	Arg	Leu	Gly	Ile	Ser
1295						1300					1305			
Cys	Thr	Arg	Leu	Arg	Arg	Leu	Arg	Asn	Lys	Thr	Ala	His	Gln	Met
1310						1315					1320			
Lys	Val	Gln	His	Phe	Tyr	Gln	Gln	Leu	Leu	Ser	Asp	Val	Ala	Trp
1325						1330					1335			
Ala	Ser	Leu	Asp	Leu	Pro	Ser	Leu	Val	Ala	Glu	His	Leu	Pro	Gly
1340						1345					1350			
Arg	Gln	Glu	His	Val	Phe	Trp	Lys	Leu	Val	Leu	Val	Leu	Pro	Asp
1355						1360					1365			
Val	Glu	Glu	Gln	Ser	Pro	Glu	Ser	Cys	Gly	Arg	Ile	Leu	Ala	Asn
1370						1375					1380			
Trp	Leu	Lys	Val	Lys	Phe	Met	Gly	Asp	Glu	Gly	Ser	Val	Asp	Asp
1385						1390					1395			

Thr	Ser	Ser	Asp	Ala	Gly	Gly	Ile	Gln	Thr	Leu	Ser	Leu	Phe	Asn
1400						1405					1410			
Ser	Leu	Ser	Ser	Lys	Gly	Asp	Gln	Met	Ile	Ser	Val	Asn	Val	Cys
1415						1420					1425			
Ile	Lys	Val	Ala	His	Gly	Ala	Leu	Ser	Asp	Gly	Ala	Ile	Asp	Ala
1430						1435					1440			
Val	Glu	Thr	Gln	Lys	Asp	Leu	Leu	Gly	Ala	Ser	Gly	Leu	Met	Leu
1445						1450					1455			
Leu	Leu	Pro	Pro	Lys	Met	Lys	Ser	Glu	Asp	Met	Ala	Glu	Glu	Asp
1460						1465					1470			
Val	Tyr	Trp	Leu	Ser	Ala	Leu	Leu	Gln	Leu	Lys	Gln	Leu	Leu	Gln
1475						1480					1485			
Ala	Lys	Pro	Phe	Gln	Pro	Ala	Leu	Pro	Leu	Val	Val	Leu	Val	Pro
1490						1495					1500			
Ser	Pro	Gly	Gly	Asp	Ala	Val	Glu	Lys	Glu	Val	Glu	Asp	Gly	Leu
1505						1510					1515			
Met	Leu	Gln	Asp	Leu	Val	Ser	Ala	Lys	Leu	Ile	Ser	Asp	Tyr	Thr
1520						1525					1530			
Val	Thr	Glu	Ile	Pro	Asp	Thr	Ile	Asn	Asp	Leu	Gln	Gly	Ser	Thr
1535						1540					1545			
Lys	Val	Leu	Gln	Ala	Val	Gln	Trp	Leu	Val	Ser	His	Cys	Pro	His
1550						1555					1560			
Ser	Leu	Asp	Leu	Cys	Cys	Gln	Thr	Leu	Ile	Gln	Tyr	Val	Glu	Asp
1565						1570					1575			
Gly	Ile	Gly	His	Glu	Phe	Ser	Gly	Arg	Phe	Phe	His	Asp	Arg	Arg
1580						1585					1590			
Glu	Arg	Arg	Leu	Gly	Gly	Leu	Ala	Ser	Gln	Glu	Pro	Gly	Ala	Ile
1595						1600					1605			
Ile	Glu	Leu	Phe	Asn	Ser	Val	Leu	Gln	Phe	Leu	Ala	Ser	Val	Val
1610						1615					1620			

Ser	Ser	Glu	Gln	Leu	Cys	Asp	Leu	Ser	Trp	Pro	Val	Thr	Glu	Phe
1625						1630					1635			
Ala	Glu	Ala	Gly	Gly	Ser	Arg	Leu	Leu	Pro	His	Leu	His	Trp	Asn
1640						1645					1650			
Ala	Pro	Glu	His	Leu	Ala	Trp	Leu	Lys	Gln	Ala	Val	Leu	Gly	Phe
1655						1660					1665			
Gln	Leu	Pro	Gln	Met	Asp	Leu	Pro	Pro	Leu	Gly	Ala	Pro	Trp	Leu
1670						1675					1680			
Pro	Val	Cys	Ser	Met	Val	Val	Gln	Tyr	Ala	Ser	Gln	Ile	Pro	Ser
1685						1690					1695			
Ser	Arg	Gln	Thr	Gln	Pro	Val	Leu	Gln	Ser	Gln	Val	Glu	Asn	Leu
1700						1705					1710			
Leu	His	Arg	Thr	Tyr	Cys	Arg	Trp	Lys	Ser	Lys	Ser	Pro	Ser	Pro
1715						1720					1725			
Val	His	Gly	Ala	Gly	Pro	Ser	Val	Met	Glu	Ile	Pro	Trp	Asp	Asp
1730						1735					1740			
Leu	Ile	Ala	Leu	Cys	Ile	Asn	His	Lys	Leu	Arg	Asp	Trp	Thr	Pro
1745						1750					1755			
Pro	Arg	Leu	Pro	Val	Thr	Ser	Glu	Ala	Leu	Ser	Glu	Asp	Gly	Gln
1760						1765					1770			
Ile	Cys	Val	Tyr	Phe	Phe	Lys	Asn	Asp	Leu	Lys	Lys	Tyr	Asp	Val
1775						1780					1785			
Pro	Leu	Ser	Trp	Glu	Gln	Ala	Arg	Leu	Gln	Thr	Gln	Lys	Glu	Leu
1790						1795					1800			
Gln	Leu	Arg	Glu	Gly	Arg	Leu	Ala	Ile	Lys	Pro	Phe	His	Pro	Ser
1805						1810					1815			
Ala	Asn	Asn	Phe	Pro	Ile	Pro	Leu	Leu	His	Met	His	Arg	Asn	Trp
1820						1825					1830			

Lys Arg Ser Thr Glu Cys Ala Gln Glu Gly Arg Ile Pro Ser Thr
 1835 1840 1845

Glu Asp Leu Met Arg Gly Ala Ser Ala Glu Glu Leu Leu Ala Gln
 1850 1855 1860

Cys Leu Ser Ser Ser Leu Leu Leu Glu Lys Glu Glu Asn Lys Arg
 1865 1870 1875

Phe Glu Asp Gln Leu Gln Gln Trp Leu Ser Glu Asp Ser Gly Ala
 1880 1885 1890

Phe Thr Asp Leu Thr Ser Leu Pro Leu Tyr Leu Pro Gln Thr Leu
 1895 1900 1905

Val Ser Leu Ser His Thr Ile Glu Pro Val Met Lys Thr Ser Val
 1910 1915 1920

Thr Thr Ser Pro Gln Ser Asp Met Met Arg Glu Gln Leu Gln Leu
 1925 1930 1935

Ser Glu Ala Thr Gly Thr Cys Leu Gly Glu Arg Leu Lys His Leu
 1940 1945 1950

Glu Arg Leu Ile Arg Ser Ser Arg Glu Glu Glu Val Ala Ser Glu
 1955 1960 1965

Leu His Leu Ser Ala Leu Leu Asp Met Val Asp Ile
 1970 1975 1980

<210> 5
 <211> 863
 <212> PRT
 <213> retroviral provirus

<400> 5

Lys Glu Gln Lys Thr Val Ala Met Arg Val Lys Glu Lys Tyr Gln His
 1 5 10 15

Leu Trp Arg Trp Gly Trp Arg Trp Gly Thr Met Leu Leu Gly Met Leu
 20 25 30

Met Ile Cys Ser Ala Thr Glu Lys Leu Trp Val Thr Val Tyr Tyr Gly
 35 40 45

Val Pro Val Trp Lys Glu Ala Thr Thr Thr Leu Phe Cys Ala Ser Asp
50 55 60

Ala Lys Ala Tyr Asp Thr Glu Val His Asn Val Trp Ala Thr His Ala
65 70 75 80

Cys Val Pro Thr Asp Pro Asn Pro Gln Glu Val Val Leu Val Asn Val
85 90 95

Thr Glu Asn Phe Asn Met Trp Lys Asn Asp Met Val Glu Gln Met His
100 105 110

Glu Asp Ile Ile Ser Leu Trp Asp Gln Ser Leu Lys Pro Cys Val Lys
115 120 125

Leu Thr Pro Leu Cys Val Ser Leu Lys Cys Thr Asp Leu Lys Asn Asp
130 135 140

Thr Asn Thr Asn Ser Ser Ser Gly Arg Met Ile Met Glu Lys Gly Glu
145 150 155 160

Ile Lys Asn Cys Ser Phe Asn Ile Ser Thr Ser Ile Arg Gly Lys Val
165 170 175

Gln Lys Glu Tyr Ala Phe Phe Tyr Lys Leu Asp Ile Ile Pro Ile Asp
180 185 190

Asn Asp Thr Thr Ser Tyr Thr Leu Thr Ser Cys Asn Thr Ser Val Ile
195 200 205

Thr Gln Ala Cys Pro Lys Val Ser Phe Glu Pro Ile Pro Ile His Tyr
210 215 220

Cys Ala Pro Ala Gly Phe Ala Ile Leu Lys Cys Asn Asn Lys Thr Phe
225 230 235 240

Asn Gly Thr Gly Pro Cys Thr Asn Val Ser Thr Val Gln Cys Thr His
245 250 255

Gly Ile Arg Pro Val Val Ser Thr Gln Leu Leu Leu Asn Gly Ser Leu
260 265 270

Ala Glu Glu Glu Val Val Ile Arg Ser Ala Asn Phe Thr Asp Asn Ala

275					280					285						
Lys	Thr	Ile	Ile	Val	Gln	Leu	Asn	Gln	Ser	Val	Glu	Ile	Asn	Cys	Thr	
290					295					300						
Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Ile	Arg	Ile	Gln	Arg	Gly	Pro	
305					310					315					320	
Gly	Arg	Ala	Phe	Val	Thr	Ile	Gly	Lys	Ile	Gly	Asn	Met	Arg	Gln	Ala	
325					330					335						
His	Cys	Asn	Ile	Ser	Arg	Ala	Lys	Trp	Asn	Asn	Thr	Leu	Lys	Gln	Ile	
340					345					350						
Asp	Ser	Lys	Leu	Arg	Glu	Gln	Phe	Gly	Asn	Asn	Lys	Thr	Ile	Ile	Phe	
355					360					365						
Lys	Gln	Ser	Ser	Gly	Gly	Asp	Pro	Glu	Ile	Val	Thr	His	Ser	Phe	Asn	
370					375					380						
Cys	Gly	Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Ser	Thr	Gln	Leu	Phe	Asn	Ser	
385					390					395					400	
Thr	Trp	Phe	Asn	Ser	Thr	Trp	Ser	Thr	Lys	Gly	Ser	Asn	Asn	Thr	Glu	
405					410					415						
Gly	Ser	Asp	Thr	Ile	Thr	Leu	Pro	Cys	Arg	Ile	Lys	Gln	Ile	Ile	Asn	
420					425					430						
Met	Trp	Gln	Glu	Val	Gly	Lys	Ala	Met	Tyr	Ala	Pro	Pro	Ile	Ser	Gly	
435					440					445						
Gln	Ile	Arg	Cys	Ser	Ser	Asn	Ile	Thr	Gly	Leu	Leu	Leu	Thr	Arg	Asp	
450					455					460						
Gly	Gly	Asn	Ser	Asn	Asn	Glu	Ser	Glu	Ile	Phe	Arg	Pro	Gly	Gly	Gly	
465					470					475					480	
Asp	Met	Arg	Asp	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys	Tyr	Lys	Val	Val	
485					490					495						
Lys	Ile	Glu	Pro	Leu	Gly	Val	Ala	Pro	Thr	Lys	Ala	Lys	Arg	Arg	Val	
500					505					510						

Val Gln Arg Glu Lys Arg Ala Val Gly Ile Gly Ala Leu Phe Leu Gly
515 520 525

Phe Leu Gly Ala Ala Gly Ser Thr Met Gly Ala Ala Ser Met Thr Leu
530 535 540

Thr Val Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln Gln Asn
545 550 555 560

Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Leu Leu Gln Leu Thr
565 570 575

Val Trp Gly Ile Lys Gln Leu Gln Ala Arg Ile Leu Ala Val Glu Arg
580 585 590

Tyr Leu Lys Asp Gln Gln Leu Leu Gly Ile Trp Gly Cys Ser Gly Lys
595 600 605

Leu Ile Cys Thr Thr Ala Val Pro Trp Asn Ala Ser Trp Ser Asn Lys
610 615 620

Ser Leu Glu Gln Ile Trp Asn Asn Met Thr Trp Met Glu Trp Asp Arg
625 630 635 640

Glu Ile Asn Asn Tyr Thr Ser Leu Ile His Ser Leu Ile Glu Glu Ser
645 650 655

Gln Asn Gln Gln Glu Lys Asn Glu Gln Glu Leu Leu Glu Leu Asp Lys
660 665 670

Trp Ala Ser Leu Trp Asn Trp Phe Asn Ile Thr Asn Trp Leu Trp Tyr
675 680 685

Ile Lys Leu Phe Ile Met Ile Val Gly Gly Leu Val Gly Leu Arg Ile
690 695 700

Val Phe Ala Val Leu Ser Val Val Asn Arg Val Arg Gln Gly Tyr Ser
705 710 715 720

Pro Leu Ser Phe Gln Thr His Leu Pro Ile Pro Arg Gly Pro Asp Arg
725 730 735

Pro Glu Gly Ile Glu Glu Glu Gly Gly Glu Arg Asp Arg Asp Arg Ser

740

745

750

Ile Arg Leu Val Asn Gly Ser Leu Ala Leu Ile Trp Asp Asp Leu Arg
 755 760 765

Ser Leu Cys Leu Phe Ser Tyr His Arg Leu Arg Asp Leu Leu Leu Ile
 770 775 780

Val Thr Arg Ile Val Glu Leu Leu Gly Arg Arg Gly Trp Glu Ala Leu
 785 790 795 800

Lys Tyr Trp Trp Asn Leu Leu Gln Tyr Trp Ser Gln Glu Leu Lys Asn
 805 810 815

Ser Ala Val Ser Leu Leu Asn Ala Thr Ala Ile Ala Val Ala Glu Gly
 820 825 830

Thr Asp Arg Val Ile Glu Val Val Gln Gly Ala Tyr Arg Ala Ile Arg
 835 840 845

His Ile Pro Arg Arg Ile Arg Gln Gly Leu Glu Arg Ile Leu Leu
 850 855 860

<210> 6
 <211> 23
 <212> PRT
 <213> retroviral provirus

<400> 6

Asn Asn Thr Arg Lys Ser Ile Arg Ile Gln Arg Gly Pro Gly Arg Ala
 1 5 10 15

Phe Val Thr Ile Gly Lys Ile
 20

<210> 7
 <211> 20
 <212> DNA
 <213> Artificial sequence

<220>
 <223> primer

<400> 7
 tccccgccttc cagctgtgac

20

<210> 8
<211> 20
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 8
gtgctgctgt gttatgtcct

20

<210> 9
<211> 24
<212> PRT
<213> retroviral provirus

<400> 9

Cys Asn Asn Thr Arg Lys Ser Ile Arg Ile Gln Arg Gly Pro Gly Arg
1 5 10 15

Ala Phe Val Thr Ile Gly Lys Ile
 20
61/64